PRF
Composite Materials

PREPREG®
Product Data

Medium Temperature Cure Resin System

RP542-4

80°C - 120°C Cure

Applications
- Aerospace
- Automotive
- Motorsport Components
- Marine
- Defence

Processing Methods
- Vacuum bag
- Autoclave
- Press moulding
- Tube rolling
- Pressure bag

TDS011

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Description

RP542-4 is a controlled flow, toughened epoxy prepreg system formulated for the manufacture of high performance structural composite parts requiring very good impact strength properties. The system has been formulated for a medium temperature cure of 80 - 120°C under vacuum or autoclave pressure and is also suitable for press moulding. Fully cured, this system has a dry service temperature capability up to 120°C. The component surface finish with this system is excellent.

The tack level of this system has been optimised to meet the constructor's requirements and will be retained for up to 60 days at 20°C making this system suitable for the manufacture of large composite components.

RP542-4 can be supplied on most of the vast range of PRF reinforcement materials in widths up to 1350 mm wide.

Main features

- Excellent surface finish
- Core bondable
- Standard Cure 80°C - 120°C
- Service Temperature up to 120°C
- Peak Tg 138°C : 1 hour 120°C : DMA
- Controlled flow system
- Out life 60 days at 20°C
- Available on most of PRF's reinforcement fabrics

Storage

This product should be stored in refrigerated conditions.

Shelf life

20°C	60 days
30°C	20 days
5°C	1 year
-20°C	2 year

Health and Safety - Refer to the full Material Safety Datasheet before use.

Processing

RP542-4 prepreg resin system may be processed at room temperature using established prepreg moulding techniques on properly prepared moulds. The cure cycle depends on the construction of the component and processing method. If honeycomb core is used in the part, the temperature ramp should be increased at a slower rate to enable a controlled flow of the resin to form a fillet between the core and skin.

Recommended cure cycle is to ramp from ambient to 120°C at 1-2°C/minute and then dwell for 1 hour. Part should then be allowed to cool naturally before demoulding.

Alternative cure temperatures are in testing.

Cure cycles

Laminates with honeycomb core

Elevate temperatures at 2 - 5°C per minute up to 120°C. Hold the final temperature for 1 hour then allow the component to cool naturally inside the oven/autoclave before demoulding.

Vacuum bagged monolithic laminates

Elevate temperature at 3 - 5°C per minute up to 120°C, hold for 1 hour then allow the component to cool naturally inside the oven/autoclave before demoulding.

Press moulded monolithic laminates

RP-542-4 system may be applied directly to hot press moulds at temperatures up to 130°C. The cure time at the highest temperature will be approximately 45 minutes. The mould and component temperatures should be cooled to below 80°C before demouding. It is important, when manufacturing honeycomb sandwich panels without the use of adhesive films, to increase the resin content on the fabric plies being used as the first layers against the honeycomb. This ensures enough resin is available for the formation of the resin fillet between the honeycomb and the skins.

Post cure cycle

A post cure can be carried out if the maximum Tg is required. The recommended post cure cycle is to ramp the temperature to 120°C at 1-2°C/minute and hold for 1 hour. Tg after this time will be 120-125°C (measured by DSC).

Mechanical Properties

Unidirectional Epoxy Prepreg 300g/m^2 34-700 12K

Press moulded 5 bar at 120°C for 2 hours

Tensile Strength (MPa)	ISO 527	1961
Tensile Modulus (GPa)	ISO 527	125
Tensile Strain at Failure (%)	ISO 527	1.55
Compressive strength (MPa)	ISO 14126	1204
Compressive Modulus (GPa)	ISO 14126	109
Flexural Strength (GPa)	ISO 14125	1.3
Flexural Modulus (GPa)	ISO 14125	97
ILSS (MPa)	ISO 14130	82

Epoxy Prepreg 200gsm 2x2 Carbon Twill TR30S 3K

Press moulded 5 bar at 120°C for 2 hours

ILSS (MPa)	ISO 14130	61.6
Flexural Strength (MPa)	ASTM D790	890
Flexural Modulus (GPa)	ASTM D790	55.5
Compressive strength (MPa)	ISO 14126	538
Compressive Modulus (GPa)	ISO 14126	55.6
Tensile Strength (MPa)	ISO 527	770
Tensile Modulus (GPa)	ISO 527	56.1

Find out what PRF can do for your business

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